CLAIMS

What is claimed is:

1. A window ball grid array (WBGA) semiconductor package, comprising:

a substrate having an upper surface and an opposite lower surface and having an opening formed through the same;

at least one chip mounted on the upper surface and over the opening of the substrate via an adhesive, and electrically connected to the lower surface of the substrate via a plurality of bonding wires going through the opening, with gaps, not applied with the adhesive, being formed between the chip and the substrate;

an encapsulation body made of a resin material and formed on the upper and lower surfaces of the substrate for encapsulating the chip and the bonding wires, wherein the gaps between the chip and the substrate allow the resin material to pass therethrough to fill the opening of the substrate and the gaps; and

a plurality of solder balls bonded to area free of the encapsulation body on the lower surface of the substrate and exposed outside.

2. The semiconductor package of claim 1, wherein the encapsulation body partly formed on the lower surface of the substrate has a thickness smaller than a height of the solder balls.
3. The semiconductor package of claim 1, wherein the chip has an active surface and an opposite inactive surface, and the active surface faces the opening and is connected with the bonding wires, allowing the active surface to be entirely encapsulated by the adhesive and the encapsulation body.
4. The semiconductor package of claim 3, wherein the inactive surface of the chip is exposed to outside of the encapsulation body.
5. The semiconductor package of claim 1, wherein the chip has a surface area larger than the opening of the substrate and entirely covers the opening.
6. The semiconductor package of claim 5, wherein the opening is of a rectangular

shape having two opposite longer sides and two opposite shorter sides.

7. The semiconductor package of claim 6, wherein the gaps between the chip and the substrate are located along the two shorter sides of the opening.

8. The semiconductor package of claim 1, wherein the gaps have a height equal to a thickness of the adhesive which is predetermined to allow particles of the resin material to pass through the gaps.

9. The semiconductor package of claim 7, wherein the gaps have a height equal to a thickness of the adhesive which is predetermined to allow particles of the resin material to pass through the gaps.

10. A method for fabricating a window ball grid array (WBGA) semiconductor package, comprising the steps of:

preparing a substrate plate integrally formed of a plurality of substrates each of which has an upper surface and an opposite lower surface and has an opening formed through the same;

mounting at least one chip on the upper surface and over the opening of each of the substrates via an adhesive, with gaps, not applied with the adhesive, being formed between the chips and the corresponding substrates;

forming a plurality of bonding wires through the opening of each of the substrates for electrically connecting the chip to the lower surface of the corresponding substrate;

preparing a spacer having a plurality of through holes and attaching the spacer to the lower surfaces of the substrates, wherein each of the through holes corresponds to and is larger than the opening of each of the substrates, and the spacer has a thickness larger than a height of wire loops of the bonding wires protruding from the lower surfaces of the substrates so as to allow the bonding wires bonded to each of the chips to be received in the corresponding through hole of the spacer and the opening of the corresponding substrate;

performing a molding process which uses an upper mold having a cavity and a lower mold to form an encapsulation body by a resin material on the upper and lower surfaces of the substrates, wherein the upper mold is mounted on the upper surfaces of the substrates with the chips being received in the cavity, and the lower mold is attached to the spacer which is disposed between the substrates and the lower mold, so as to allow the resin material to fill the cavity for encapsulating the chips and flow through the gaps between the chips and the corresponding substrates for filling the openings of the substrates, the through holes of the spacer, and the gaps and encapsulating the bonding wires;

removing the upper and lower molds and the spacer from the substrates;

bonding a plurality of solder balls to area free of the encapsulation body on the lower surface of each of the substrates; and

cutting the encapsulation body partly formed on the upper surfaces of the substrates and the substrate plate to separate apart the integrally formed substrates and form a plurality of individual semiconductor packages each having a singulated substrate.

11. The method of claim 10, wherein the encapsulation body partly formed on the lowers surfaces of the substrates has a thickness smaller than a height of the solder balls.

12. The method of claim 10, wherein the chip has an active surface and an opposite inactive surface, and the active surface faces the opening of the corresponding substrate and is connected with the bonding wires, allowing the active surface to be entirely encapsulated by the adhesive and the encapsulation body.

13. The method of claim 12, wherein the inactive surface of the chip is exposed to outside of the encapsulation body.

14. The method of claim 10, wherein the chip has a surface area larger than the opening of the corresponding substrate and entirely covers the opening.

15. The method of claim 14, wherein the opening is of a rectangular shape having two opposite longer sides and two opposite shorter sides.

16. The method of claim 15, wherein the gaps between the chip and the substrate are located along the two shorter sides of the opening.

17. The method of claim 10, wherein the gaps have a height equal to a thickness of the adhesive which is predetermined to allow particles of the resin material to pass through the gaps.

18. The method of claim 16, wherein the gaps have a height equal to a thickness of the adhesive which is predetermined to allow particles of the resin material to pass through the gaps.

19. The method of claim 10, wherein the lower mold has a flat surface in contact with the spacer.

20. The method of claim 10, wherein the spacer is made of a rigid material.